

Amendments to the Claims:

This following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): In an optical fiber communication [**transmitter**] system, a method for superimposing utility data on an optical signal, said method comprising:

receiving utility data of said optical fiber communication system from a utility data source;

spreading said utility data according to a spreading code to generate a spread spectrum signal; and

modulating said optical signal with a combination of said spread spectrum signal and a signal carrying payload data, said optical signal for transmission on an optical fiber of said optical fiber communication system.

Claim 2 (original): The method of claim 1 wherein modulating comprises:

adding said spread spectrum signal to said payload data signal to form a modulation signal; and

applying said modulation signal to input of an optical modulator that modulates said optical signal.

Claim 3 (original): The method of claim 1 wherein modulating comprises:

adding said spread spectrum signal to said payload data signal to form a modulation signal; and

driving a laser using said modulation signal so that said laser outputs said optical signal modulated with both said payload data and said utility data.

Claim 4 (original): The method of claim 1 wherein modulating comprises:

driving a laser using said spread spectrum signal;

modulating output of said laser using said payload data signal.

Claim 5 (original): The method of claim 1 wherein said utility data comprises a signal strength indication.

Claim 6 (original): The method of claim 1 wherein said utility data comprises firmware for updating operation of equipment of said optical fiber communication system.

Claim 7 (original): The method of claim 1 further comprising:
outputting a modulated optical signal wherein modulation due to said payload data and modulation due to said utility data overlap spectrally.

Claim 8 (currently amended): In an optical fiber communication **[receiver]** system, a method for recovering utility data of said optical fiber communication system from an optical signal, said method comprising:

accepting as input an optical signal modulated with payload data and said utility data, said optical signal received over an optical fiber of said optical fiber communication system;

multiplying an electrical signal derived from said optical signal by a spreading sequence to recover said utility data, said electrical signal carrying both said payload data and said utility data; and

recovering said payload data from said optical signal.

Claim 9 (original): The method of claim 8 wherein in a spectrum of said optical signal as input, modulation due to said utility data and modulation due to said payload data overlap in the frequency domain.

Claim 10 (original): The method of claim 8 wherein said utility data comprises a signal strength indication.

Claim 11 (currently amended): The method of claim 8 wherein said utility data comprises firmware for updating operation of equipment of said optical fiber communication system.

Claim 12 (currently amended): In an optical fiber communication **[transmitter]** system, a transmitter apparatus for superimposing utility data on an optical signal, said apparatus comprising:

means for receiving utility data of said optical fiber communication system from a utility data source;

means for spreading said utility data according to a spreading code to generate a spread spectrum signal; and

means for modulating said optical signal with a combination of said spread spectrum signal and a signal carrying payload data, said optical signal for transmission on an optical fiber of said optical fiber communication system.

Claim 13 (original): The apparatus of claim 12 wherein said modulating means comprises:

means for adding said spread spectrum signal to said payload data signal to form a modulation signal; and

means for applying said modulation signal to input of an optical modulator that modulates said optical signal.

Claim 14 (original): The apparatus of claim 12 wherein said modulating means comprises:

means for adding said spread spectrum signal to said payload data signal to form a modulation signal; and

means for driving a laser using said modulation signal so that said laser outputs said optical signal modulated with both said payload data and said utility data.

Claim 15 (original): The apparatus of claim 12 wherein said modulating means comprises:

means for driving a laser using said spread spectrum signal;

means for modulating output of said laser using said payload data signal.

Claim 16 (original): The apparatus of claim 12 wherein said utility data comprises a signal strength indication.

Claim 17 (currently amended): The apparatus of claim 12 wherein said utility data comprises firmware or updating operation of equipment of said optical fiber communication system.

Claim 18 (original): The apparatus of claim 12 further comprising:
means for outputting a modulated optical signal wherein modulation due to said payload data and modulation due to said utility data overlap spectrally.

Claim 19 (currently amended): In an optical fiber communication **[receiver]** system, a receiver apparatus for recovering utility data of said optical fiber communication system from an optical signal, said apparatus comprising:

means for accepting as input an optical signal modulated with payload data and said utility data, said optical signal received over an optical fiber of said optical fiber communication system;

means for multiplying an electrical signal derived from said optical signal by a spreading sequence to recover said utility data, said electrical signal carrying both said payload data and said utility data; and

means for recovering said payload data from said optical signal.

Claim 20 (original): The apparatus of claim 19 wherein in a spectrum of said optical signal as input, modulation due to said utility data and modulation due to said payload data overlap in the frequency domain.

Claim 21 (original): The apparatus of claim 19 wherein said utility data comprises a signal strength indication.

Claim 22 (currently amended): The apparatus of claim 19 wherein said utility data comprises firmware for updating operation of equipment of said optical fiber communication system.

Claim 23 (currently amended): In an optical fiber communication **[transmitter]** system, a transmitter apparatus for superimposing utility data of said optical fiber communication system on an optical signal, said apparatus comprising:

a spread spectrum processing block that spreads said utility data using a spreading sequence to generate a spread spectrum signal; and

a modulation system that modulates said optical signal using both said payload data and said utility data as spread by said spread spectrum processing block, said optical signal for transmission on an optical fiber of said optical fiber communication system.

Claim 24 (original): The apparatus of claim 23 wherein said modulation system comprises:

a summer that adds said spread spectrum signal to said payload data to form a modulation signal; and

an optical modulator that modulates said optical signal responsive to said modulation signal.

Claim 25 (original): The apparatus of claim 23 wherein said modulation system comprises:

a summer that adds said spread spectrum signal to said payload data to form a modulation signal; and

wherein a laser is driven using said modulation signal so that said laser outputs said optical signal modulated with both said payload data and said utility data.

Claim 26 (original): The apparatus of claim 23 wherein said modulation system comprises:

an optical modulator that modulates output of a laser using said payload data signal; and wherein said laser is driven using said spread spectrum signal.

Claim 27 (original): The apparatus of claim 23 wherein said utility data comprises a signal strength indication.

Claim 28 (currently amended): The apparatus of claim 23 wherein said utility data comprises firmware for updating operation of equipment of said optical fiber communication system.

Claim 29 (original): The apparatus of claim 23 further wherein modulation imposed on said optical signal due to said payload data and modulation imposed on said optical signal due to said utility data overlap spectrally.

Claim 30 (currently amended): In an optical fiber communication [receiver] system, a receiver apparatus for recovering utility data of said optical fiber communication system from an optical signal, said apparatus comprising:

a input that accepts ~~an~~ said optical signal modulated with payload data and said utility data, said optical signal received over an optical fiber of said optical fiber communication system;

a spread spectrum processing block that uses a spreading sequence to recover said utility data from an electrical signal derived from said optical signal.

Claim 31 (original): The apparatus of claim 30 wherein in a spectrum of said optical signal as input, modulation due to said utility data and modulation due to said payload data overlap in the frequency domain.

Claim 32 (original): The apparatus of claim 30 wherein said utility data comprises a signal strength indication.

Claim 33 (currently amended): The apparatus of claim 30 wherein said utility data comprises firmware for updating operation of equipment of said optical fiber communication system.

Claim 34 (new): The method of claim 1 wherein said optical signal comprises a WDM channel signal.

Claim 35 (new): The method of claim 8 wherein said optical signal comprises a WDM channel signal.

Claim 36 (new): The apparatus of claim 12 wherein said optical signal comprises a WDM channel signal.

Claim 37 (new): The apparatus of claim 19 wherein said optical signal comprises a WDM channel signal.

Claim 38 (new): The apparatus of claim 23 wherein said optical signal comprises a WDM channel signal.

Claim 39 (new): The apparatus of claim 30 wherein said optical signal comprises a WDM channel signal.